WHAT IS CLAIMED IS:

1. A linear actuator comprising:

an inner yoke;

an outer yoke which is arranged so as to form a prescribed gap space to an outer peripheral face of the inner yoke, the outer yoke comprising:

a first facing portion which faces the inner yoke; and

a second facing portion which faces the inner yoke and is formed to be separated from the first facing portion in an axial direction;

a coil for generating a magnetic field between the outer yoke and the inner yoke;

an insulating coil bobbin around which the coil is wound, the insulating coil bobbin comprising an engaging part which engages with both the first facing portion and the second facing portion of the outer yoke;

a magnet which is disposed between the inner yoke and the outer yoke;

and

a movable body integrally connected with the magnet to move in an axial direction.

2. The linear actuator according to claim 1, further comprising:

a first gap space formed between the first facing portion of the outer yoke and the outer peripheral face of the inner yoke;

a second gap space formed between the second facing portion of the outer yoke and the outer peripheral face of the inner yoke; and

an alternating magnetic field generated by the coil at the first gap space and the second gap space so as to form a magnetic path passing through the outer yoke, the first gap space, the inner yoke, the second gap space and the above-mentioned outer yoke,

wherein the movable body along with the magnet is reciprocally moved in the axial direction in conjunction with the alternating magnetic field.

3. The linear actuator according to claim 1, wherein the coil bobbin is interposed between the coil and the outer yoke so as to ensure an insulation between the coil and the outer yoke and the engaging part provided in the coil bobbin is formed between the first facing portion and the second facing portion of the outer yoke.

4. The linear actuator according to claim 3, further comprising an engaging protrusion part which is formed in the engaging part and protruded toward the inner yoke, wherein a front end portion of the first facing portion of the outer yoke and a front end portion of the second facing portion are respectively engaged with the engaging protrusion part from both sides in the axial direction.

5. The linear actuator according to claim 3, further comprising engaging recessed parts which are respectively formed at a front end portion of the first facing portion of the outer yoke and at a front end portion of the second facing portion to engage with the engaging part provided in the coil bobbin.

6. The linear actuator according to claim 5, further comprising a small projecting part which is formed in the engaging protrusion part and protruded toward the inner yoke from the positions of the engaging recessed parts provided in the front end portions of the first and the second facing portions.

7. The linear actuator according to claim 6, further comprising a first prescribed clearance between the front end portion of the first facing portion and the engaging protrusion part and a second prescribed clearance between the front end portion of the second facing portion and the engaging protrusion part in the axial direction.

8. The linear actuator according to claim 3, wherein the outer yoke comprises a first outer yoke member and a second outer yoke member which are respectively formed in a U-shape cross-section so as to cover the coil from both sides in the axial direction, and the first outer yoke member and the second outer yoke member are constituted in such a manner that both end portions are abutted with each other at a portion located on an outer peripheral side of the coil while the front end portion of the first facing portion and the front end portion of the second facing portion located on an inner peripheral side of the coil respectively engage with the engaging protrusion part from both sides in the axial direction so as to have a prescribed clearance in axial direction between the respective front end portions and the engaging protrusion part.

9. A pump device comprising:

a linear actuator, the linear actuator comprising:

an inner yoke;

an outer yoke which is arranged so as to form a prescribed gap space to an outer peripheral face of the inner yoke, the outer yoke comprising:

a first facing portion which faces the inner yoke; and

a second facing portion which faces the inner yoke and is formed to be separated from the first facing portion in an axial direction;

a coil for generating a magnetic field between the outer yoke and the inner yoke;

an insulating coil bobbin around which the coil is wound, the insulating coil bobbin comprising an engaging part which engages with both the first facing portion and the second facing portion of the outer yoke; and

a magnet which is disposed between the inner yoke and the outer yoke; and

a movable body integrally connected with the magnet to move in an axial direction.

10. The pump device according to claim 9, wherein the linear actuator further comprises:

a first gap space formed between the first facing portion of the outer yoke and the outer peripheral face of the inner yoke;

a second gap space formed between the second facing portion of the outer yoke and the outer peripheral face of the inner yoke; and

an alternating magnetic field generated by the coil at the first gap space and the second gap space so as to form a magnetic path passing through the outer yoke, the first gap space, the inner yoke, the second gap space and the above-mentioned outer yoke,

wherein the movable body along with the magnet is reciprocally moved in the axial direction in conjunction with the alternating magnetic field, the coil bobbin is interposed between the coil and the outer yoke so as to ensure an insulation between the coil and the outer yoke and the engaging part provided in the coil bobbin is formed between the first facing portion of the outer yoke and the second facing portion.

11. The pump device according to claim 10, wherein the coil bobbin further comprises an engaging protrusion part which is formed in the engaging part and protruded toward the inner yoke and the outer yoke further comprises a front end portion of the first facing portion and a front end portion of the second facing portion which are respectively engaged with the engaging protrusion part from both sides in the axial direction.

12. The pump device according to claim 11, wherein the outer yoke further comprises engaging recessed parts which are respectively formed at a front end portion of the first facing portion and at a front end portion of the second facing portion of to engage with the engaging part provided in the coil bobbin.

13. The pump device according to claim 9, further comprising a piston which is connected with the movable body integrally moved with the magnet and capable of axially moving in a cylinder, wherein the piston is reciprocally moved by applying an alternating current to the coil.

14. A compressor device comprising:

a linear actuator, the linear actuator comprising;

an inner yoke;

an outer yoke which is arranged so as to form a prescribed gap space to an outer peripheral face of the inner yoke, the outer yoke comprising:

a first facing portion which faces the inner yoke; and

a second facing portion which faces the inner yoke and is formed to be separated from the first facing portion in an axial direction;

a coil for generating a magnetic field between the outer yoke and the inner yoke;

an insulating coil bobbin around which the coil is wound, the insulating coil bobbin comprising an engaging part which engages with both the first facing portion and the second facing portion of the outer yoke; and

a magnet which is disposed between the inner yoke and the outer yoke; and

a movable body integrally connected with the magnet to move in an axial direction.

15. The compressor device according to claim 14, wherein the linear actuator further comprises:

a first gap space formed between the first facing portion of the outer yoke and the outer peripheral face of the inner yoke;

a second gap space formed between the second facing portion of the outer yoke and the outer peripheral face of the inner yoke; and

an alternating magnetic field generated by the coil at the first gap space and the second gap space so as to form a magnetic path passing through the outer yoke, the first gap space, the inner yoke, the second gap space and the above-mentioned outer yoke,

wherein the movable body along with the magnet is reciprocally moved in the axial direction in conjunction with the alternating magnetic field, the coil bobbin is interposed between the coil and the outer yoke so as to ensure an insulation between the coil and the outer yoke and the engaging part provided in the coil bobbin is formed between the first facing portion of the outer yoke and the second facing portion.

16. The compressor device according to claim 15, wherein the coil bobbin further comprises an engaging protrusion part which is formed in the engaging part and protruded toward the inner yoke and the outer yoke further comprises a front end portion of the first facing portion and a front end portion of the second facing portion which are respectively engaged with the engaging protrusion part from both sides in the axial direction.

17. The compressor device according to claim 16, wherein the outer yoke further comprises engaging recessed parts which are respectively formed at a front end portion of the first facing portion and at a front end portion of the second facing portion of to engage with the engaging part provided in the coil bobbin.

18. The compressor device according to claim 14, further comprising a piston which is connected with the movable body integrally moved with the magnet and capable of axially moving in a cylinder, wherein the piston is reciprocally moved by applying an alternating current to the coil.

19. A linear actuator comprising:

an inner yoke;

an outer yoke spaced from the inner yoke to define a gap space therebetween, the outer yoke including:

a first facing portion facing the inner yoke; and

a second facing portion facing the inner yoke and separated from the first facing portion in an axial direction;

a magnet which is disposed in the gap space and operable to move in an axial direction;

an insulating coil bobbin around which a coil for generating a magnetic field between the outer yoke and the inner yoke is wound, the insulating coil bobbin including an engaging part which engages with both the first facing portion and the second facing portion of the outer yoke to

prevent displacement of the first and second portions of the outer yoke in a radial direction.

20. The linear actuator according to claim 19, wherein the engaging part comprises:

an upper protrusion part received in a recess of the first facing portion;

a lower protrusion part received in a recess of the second facing portion;

wherein a first prescribed clearance is formed in the recess of the first facing portion and a second prescribed clearance is formed in the recess of the second facing portion.